

In the Claims:

The following listing of claims replaces all prior listings of claims in the application:

Claims 1 to 7. (Canceled).

8. (Currently Amended) A method of controlling the fuel system of a combustion engine in a vehicle, said method comprising steps of:

- (a) measuring a plurality of engine and vehicle operating conditions; and
- (b) determining an engine load status from the measured operating conditions;
- (c) obtaining a fuel map for optimized fuel consumption for the determined engine load status; and,
- (d) adjusting fueling parameters of said fuel system based upon the measurements made in step (a) fuel map to control the output power of said engine in order to achieve minimum for optimized instantaneous fuel consumption.

9. (Original) The method as recited in claim 8, wherein said plurality of vehicle and engine operating conditions include gross vehicle weight (GVW), vehicle road speed, road grade, engine speed, and engine temperature.

10. (Currently Amended) The method as recited in claim 8, wherein in step (b) step (d), the fuel parameters being adjusted include an amount of air delivered to said fuel system, a crankshaft position, an engine timing, the vehicle speed, the engine output power, and fuel flow to the engine.

11. (Original) The method as recited in claim 8, wherein in steps (a) and (b) through (d) are performed in substantially real-time.

12. (Currently Amended) The method as recited in claim 9, wherein in step (b),
~~the fuel parameters being adjusted include an amount of air delivered to said fuel system, a crankshaft position, an engine timing, the vehicle speed, the engine output power, and fuel flow to the engine~~ step (c), obtaining a fuel map includes obtaining a fuel map from a storage device.

13. (Currently Amended) The method as recited in claim 12, wherein in steps (a) and (b) are performed in substantially real-time step (c), obtaining a fuel map includes calculating a fuel map for the engine load status.

Claims 14 to 18. Canceled.

19. (Currently Amended) A control system for a fueling system of a combustion engine comprising:

sensing means for measuring a plurality of engine and vehicle conditions in real-time;

a plurality of fuel maps each optimized for a different set of engine and vehicle operating conditions including engine load conditions; and

a control module for receiving the measurements from the sensing means and determining a current engine load, for selecting one fuel map from said plurality of fuel maps based on said measurements engine load for optimized fuel consumption for the engine load, and for controlling fueling parameters of said fueling system by selecting fueling parameters from said fuel map.

20. (Original) The control system as recited in claim 19, wherein said plurality of vehicle and engine operating conditions include gross vehicle weight (GVW), vehicle road speed, road grade, engine speed, and engine temperature.

21. (Original) The control system as recited in claim 19, wherein said control module controls an amount of air delivered to said fuel system, crankshaft position, engine timing, vehicle speed, engine output power, and fuel flow based on the adjusted fueling parameters.

22. (Currently Amended) The control system as recited in claim 19, wherein said control module ~~means~~ adjusts said fueling parameters of said fuel system in real-time.

23. (Original) The control system as recited in claim 19, wherein said plurality of fuel maps are stored on a corresponding plurality of memory devices.

24. (Currently Amended) The control system as recited in claim 23, wherein said plurality of memory devices ~~comprise~~ comprises CD or DVD disks.

Claims 25 and 26. Canceled.

27. (Currently Amended) The fuel control system as recited in ~~claim 1~~ claim 19, wherein said ~~ECM~~ control module is further configured to adjust fueling parameters of said fuel system to optimize fuel consumption, the optimum fuel consumption being a minimum fuel consumption without said combustion engine generating an exhaust that exceeds EPA regulations.

28. Canceled.

29. (Currently Amended) The method as recited in ~~claim 8~~ claim 13, wherein said step (b) ~~includes a step of calculating a fuel map includes calculating~~ a position of minimum instantaneous fuel consumption on a fuel map based on said measurements, and wherein said step of adjusting fueling parameters of said fuel system includes adjusting fueling parameters based on the calculated position.

Application No. 10/579,758
Amendment dated November 10, 2008
Office Action mailed: August 15, 2008

30. (Currently Amended) The method as recited in claim 8, wherein ~~step (b)~~ step (d) includes a step of limiting optimum fuel consumption to a minimum fuel consumption without said combustion engine generating an exhaust that exceeds EPA regulations.